

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

ANNUAL MANAGEMENT REPORT

- 1969 -

COOK INLET-RESURRECTION BAY AREA

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PREFACE

All of the 1969 catch statistics for salmon appearing in this report were taken from edited fish tickets and should be considered as preliminary. Final salmon catch statistics for 1969 will appear in the 1970 management report.

ACKNOWLEDGEMENTS

The Area Management Biologist for 1969 was Jim Rearden. Mr. Rearden resigned this position effective December 31, 1969 to accept a position as outdoor editor for the Alaska Magazine. His contributions to management of the Cook Inlet fishery will be missed during the coming season.

Rearden's replacement is Don Stewart of Anchorage, Alaska. The present staff consists of Loren Flagg, Assistant Area Management Biologist; Allen Davis and Paul Kissner, Research; and Eleanor Fitzgerald, Secretary; all stationed in Homer. Effective May 1, 1970 David Daisy, Assistant Area Management Biologist, will be stationed in Anchorage.

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INTRODUCTION

The Cook Inlet-Resurrection Bay Area includes all waters of Alaska in Cook Inlet and Resurrection Bay north of Cape Douglas and west of Cape Fairfield, including the Barren Islands. The area's seven fishing districts, the Northern, North Central, South Central, Southern, Kamishak, Outer and Eastern, comprise approximately 51,000 square miles; about the same size as the state of New York. (Figure 1.)

The first significant pack of salmon was put up in 1893. Until 1964 all five species of salmon were commercially harvested; in that year the Board of Fish and Game closed all of Cook Inlet to the commercial taking of king salmon. Based on a ten year average, the most abundant of salmon are pinks, reds, chums, cohos and kings, in that order, contributing 45.0, 29.0, 19.0, 6.0, and 0.7 per cent of the total commercial catch respectively.

Five types of gear are used to harvest salmon in Cook Inlet: set and drift gill nets, hand purse and beach seines, and troll gear. Set nets are the most numerous and are used in four districts of the Inlet: Northern, North Central, South Central, and Southern. Drift nets are second in abundance and are fished in the North Central, South Central, and Eastern Districts. Hand purse and beach seines are used in the Southern, Kamishak, Outer, and Eastern Districts, and to a minor degree in Chinitna Bay in the South Central District. Trolling is allowed in the Eastern District only, south of a line from Cape Resurrection to Aialik Cape.

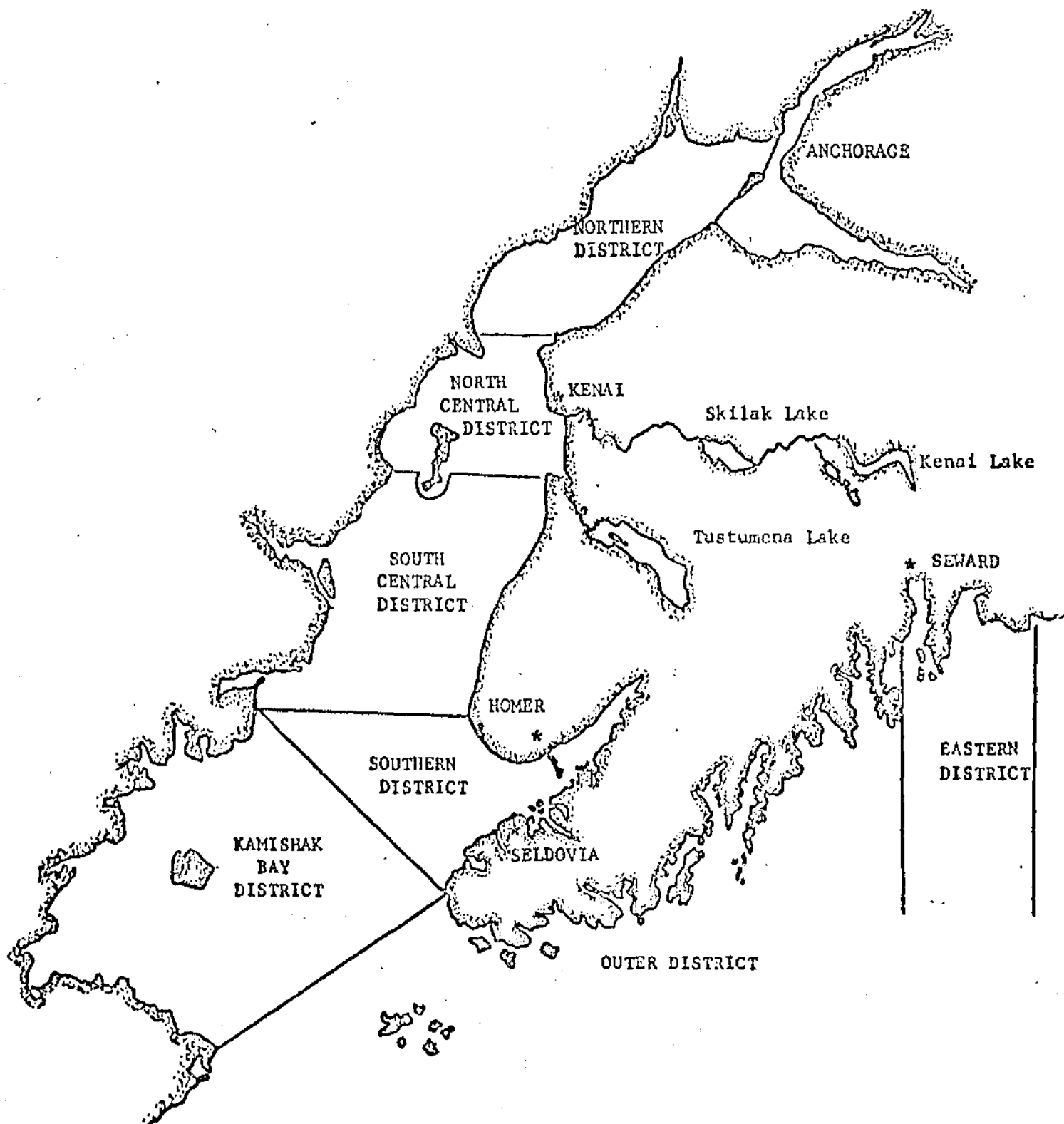


FIGURE 1. Cook Inlet-Resurrection Bay commercial fishing area.

King crab, Dungeness, and tanner crab are also harvested commercially, primarily in the Southern, Kamishak, and Outer Districts. King crab is the most important to the area and has averaged approximately 4.5 million pounds annually over the past ten year period. At present there is a 4.5 million pound quota for all of Cook Inlet, established by the Board of Fish and Game in 1969.

Other fisheries that are in the development stage are shrimp, herring, and razor clams. By-products now being utilized are salted herring roe, herring roe on kelp, and salmon roe.

Development of other natural resources such as oil drilling, seismic work, logging, and mining are on the increase, as is the staff's workload in trying to monitor these projects in critical fishery areas.

A staff of five biologists, one secretary, and approximately 20 seasonal aides are responsible for the research and management of the Cook Inlet fisheries.

SALMON FISHERY

Catch

The 1969 salmon catch for Cook Inlet totalled 1.5 million fish, with an estimated wholesale value of \$5,840,929. This is the second lowest catch on record since 1954. The low year was 1959 when 1.3 million salmon were taken. Of the 1969 catch approximately 813,400 were reds; 310,000 chums; 232,203 pinks; 105,600 cohos; and an incidental king salmon catch of 12,500. Reds, of course, were the predominant species and contributed 55.2 per cent of the total catch, or about twice the 16 year average (Table 1). The highlight of the 1969 season was the incidental king salmon catch, which was the highest (12,461) since the closure to commercial fishing in 1964. Chum and coho salmon catches fell to an all time low since 1954 with 310,000 and 105,600 being caught, respectively. More will be mentioned of these low catches under the District Summary section of this report.

The total salmon catch produced a pack of 175,061 one-pound tall cases. Since 1960 there has been only one year with a smaller case pack, i.e., 1965 (155,981) (Table 2.).

The wholesale value of the 1969 pack was \$4,961,595.

It should be kept in mind when comparing the 1969 salmon catch and case pack that fishing periods and total fishing time allowed were restricted as compared to preceding years. The Board of Fish and Game set fishing periods for 1969 at three twelve-hour fishing periods per week (Monday, Wednesday, and Friday) prior to July 15. Commencing July 15 two twelve-hour periods per week were allowed (Monday and Friday). In the past, periods were usually

TABLE 1. Cook Inlet total salmon catch, by species, 1954-1969.

Year	Chinook	Reds	Conos	Pinks	Chum	Total
1954 ^{1/}	65,275	1,446,670	336,685	2,460,051	775,659	4,084,140
1955	66,499	1,064,198	180,452	1,486,003	317,031	2,994,183
1956	65,210	1,495,095	207,534	1,803,295	870,269	4,441,403
1957	4,767	670,619	127,129	306,841	1,07,519	1,115,855
1958	7,347	496,842	241,561	2,598,314	596,179	3,955,243
1959	4,785	634,313	12,664	157,355	411,152	1,110,269
1960 ^{2/}	1,519	948,040	314,153	2,013,451	776,079	4,069,042
1961	19,778	1,135,079	119,397	337,194	405,111	1,996,559
1962	9,770	1,172,859	358,051	4,960,030	1,142,541	7,643,251
1963	1,652	958,101	203,876	134,051	305,517	1,552,197
1964	2,652	990,709	462,114	4,287,373	1,462,419	6,745,267
1965	9,751	1,466,352	154,363	139,561	444,051	2,014,078
1966	3,586	1,807,337	295,042	2,585,616	661,431	5,342,992
1967	8,015	1,409,107	180,455	607,717	27,113	2,232,307
1968	4,600	1,700,138	473,645	2,802,939	1,183,047	5,763,369
1969 ^{3/}	1,461	813,415	105,616	12,101	110,14	1,442,707
1970	8054					
1971	17,706					
16 year average	55,550	1,086,179	242,050	1,666,369	707,411	2,757,559
per cent	0.69	29.14	6.49	44.70	18.98	100.00

^{1/} 1954-1959 data - Fish and Wildlife Service Statistical Digest 50.^{2/} 1960-1968 data - Alaska Department of Fish and Game 1964 Salmon Report.^{3/} 1969 data - Alaska Department of Fish and Game Fish Tickets.

TABLE 2. Comparative salmon pack, by species, in 48 pound cases, Cook Inlet-Resurrection Bay area, 1960-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1960 ^{1/}	9,279	65,478	24,091	87,575	62,709	249,132
1961	12,942	88,687	10,673	30,401	39,092	181,795
1962	8,721	89,231	28,611	208,392	107,714	442,670
1963	8,138	74,185	20,898	13,509	46,209	162,939
1964	921	75,944	40,137	188,373	135,466	440,841
1965	1,221	109,663	11,999	5,911	27,187	155,981
1966	1,472	142,987	22,985	102,796	49,680	319,920
1967 ^{2/}	1,907	119,507	15,774	21,492	39,274	197,969
1968	557	76,368	34,873	117,812	126,554	356,164
1969 ^{3/}	1,551	49,569	7,290	85,897	30,754	175,061
10 year average	4,670	89,163	21,733	86,216	66,465	268,247
Per cent	1.7	33.2	8.1	32.1	24.8	100.0

^{1/} 1960-1966 statistics taken from Statistics Leaflet No. 13, Department of Fish and Game.

^{2/} 1967-1968 statistics taken from Cook Inlet annual management reports.

^{3/} 1969 statistics taken from Alaska Department of Fish and Game final Nimeo #1 report.

set at two 24-hour periods per week with time being curtailed or extended as needed.

At this writing the Department does not have a breakdown of salmon catch by species by district by day for comparative purposes; however, this is a major objective for the 1970 annual management report.

1969 Forecast

The Southern and Outer Districts of Cook Inlet are the only areas where forecasts of total return are made based on scientific data other than past catch trends. The forecast for these two districts is for pink salmon only, and is based on the relationship between the density of pink salmon fry found in the gravel and subsequent returns of adult salmon (Davis, Allen S., Cook Inlet Annual Management Report, 1968).

The total predicted return (catch plus escapement) in 1969 for the Southern and Outer Districts was 500,000 pink salmon, with a range from 380,000 to 620,000 at the 95 per cent confidence interval. The actual return (catch plus escapement) was 237,000 salmon, which fell short of the given range. However, the majority of the forecast was assigned to two specific areas, Port Dick and Seldovia Bay. This information did enable management to monitor these two areas more closely, even though the total forecast fell short.

Forecasts have been made for these two districts since 1966 and have been relatively accurate based on the relationship depicted in Figure 11.

Predictions for all other species and districts of the Inlet are based on past catch trends for the commercial catch only, and are far from accurate. However, based on knowledge of the predominant age class by species and past catch trends the staff did predict a low catch for 1969, which did materialize.

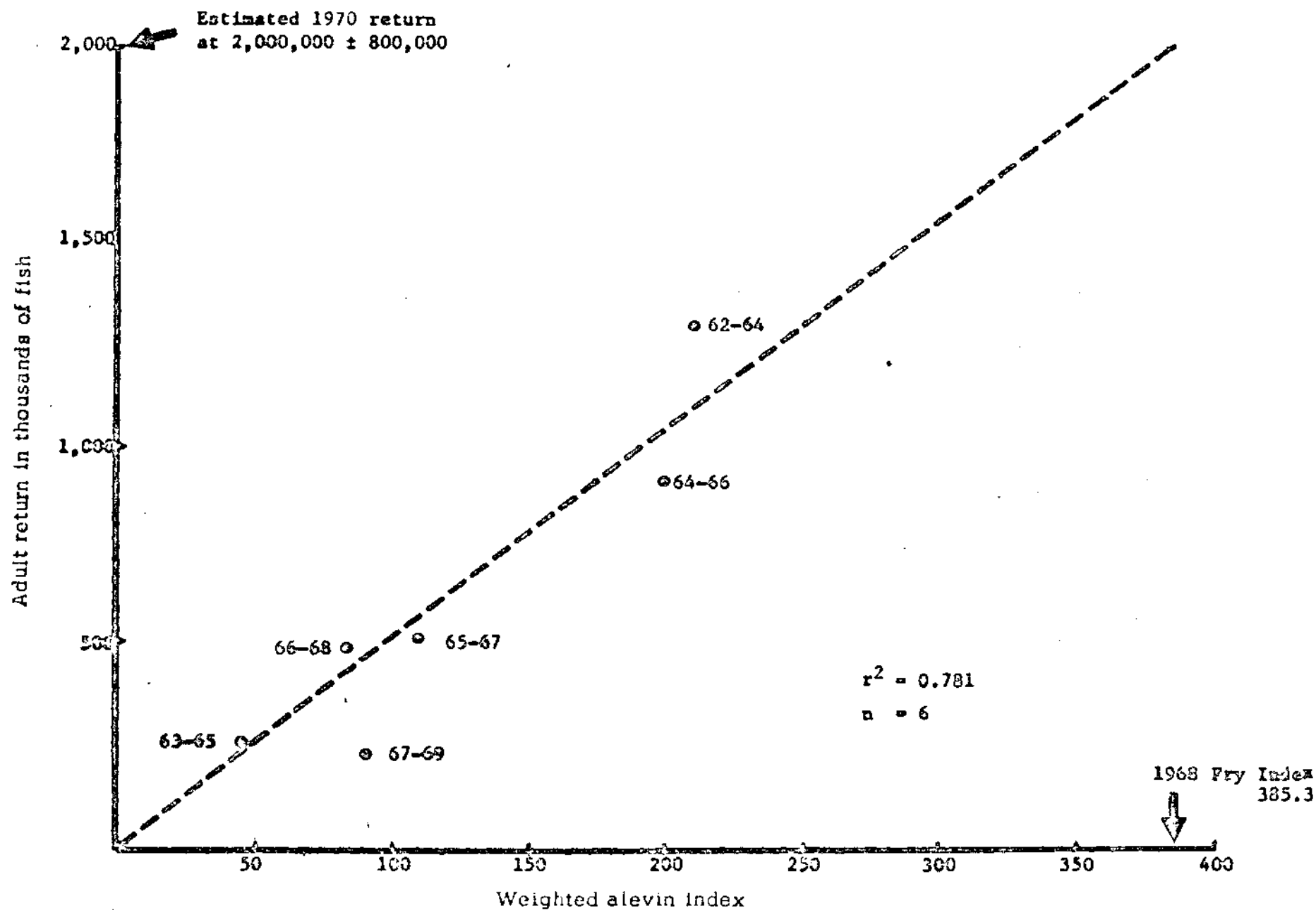


Figure 2. Cook Inlet Southern and Outer Districts, pink salmon, relationship between total return (catch plus escapement) and weighted alevin index.

Gear registration

Total gear registration for 1969 was 1,532 units, an all time high for Cook Inlet (Table 3.). Drift and set gill nets are the predominant types of gear and have shown substantial increases over the past ten year period. Drift net registration has increased 58 per cent and set net registration has increased 26 per cent.

As can be seen in Figure 3, both drift and set gill net registration remained relatively stable from 1962 through 1967; however 1968 and 1969 show a substantial increase in registered gear. This was primarily due to an attempt to establish and enforce a statewide salmon gear moratorium. This is also depicted in Figure 4 where total registered salmon gear is shown.

TABLE 3. Gear registration by type, residency, and year, Cook Inlet-Resurrection Bay, 1960-1969.

Year	R.-NR. ^{1/}	Drift	Set	P.Seine	B.Seine	Troll	Sub-total	Per cent	Total
1960	R	221	511	86	12	2/	830	88.8	935 ✓
	NR	67	29	9	-	-	105	11.2	
		[288]	[540]	95	12	0	935		
1961	R	279	564	85	6	8	942	88.8	1,061
	NR	93	22	4	-	-	119	11.2	
		377	586	89	6	8	1,061		
1962	R	260	589	84	5	9	947	86.6	1,094
	NR	112	28	7	-	-	147	13.4	
		372	617	91	5	9	1,094		
1963	R	333	626	102	5	12	1,078	85.4	1,262
	NR	139	34	10	-	1	184	14.6	
		[472]	[660]	112	5	13	1,262		
1964	R	323	596	102	5	3	1,029	84.6	1,217
	NR	145	35	6	2	-	188	15.4	
		468	631	108	7	3	1,217		
1965	R	329	556	66	9	6	966	83.8	1,153
	NR	145	34	6	-	2	187	16.2	
		474	590	72	9	8	1,153		
1966	R	328	580	72	4	8	992	71.0	1,255
	NR	176	48	5	-	4	233	29.0	
		504	628	77	4	12	1,225		
1967	R	350	554	53	3	11	971	80.0	1,214
	NR	186	50	5	-	2	243	20.0	
		536	604	58	3	13	1,214		
1968	R	407	638	85	4	10	1,144	81.8	1,398 ✓
	NR	204	43	6	-	1	254	18.2	
		611	681	91	4	11	1,398		

Continued

Year	R.-NR. ^{1/}	Drift	Set	P.Seine	B.Seine	Troll	Sub-total	Per cent	Total
1969	R	479	686	72	19	21	1,277	83.4	1,531
	NR	<u>208</u>	<u>42</u>	<u>3</u>	<u>-</u>	<u>2</u>	<u>255</u>	16.6	
		687	728	75	19	23	1,532		
10 year average		479	627	87	7	11			1,367
Per cent		35.0	45.9	6.4	5.4	7.3		100.0	

^{1/} R designates resident gear registered.
NR designates non-resident gear registered.

^{2/} Number of units of troll gear registered for 1960 is not available.

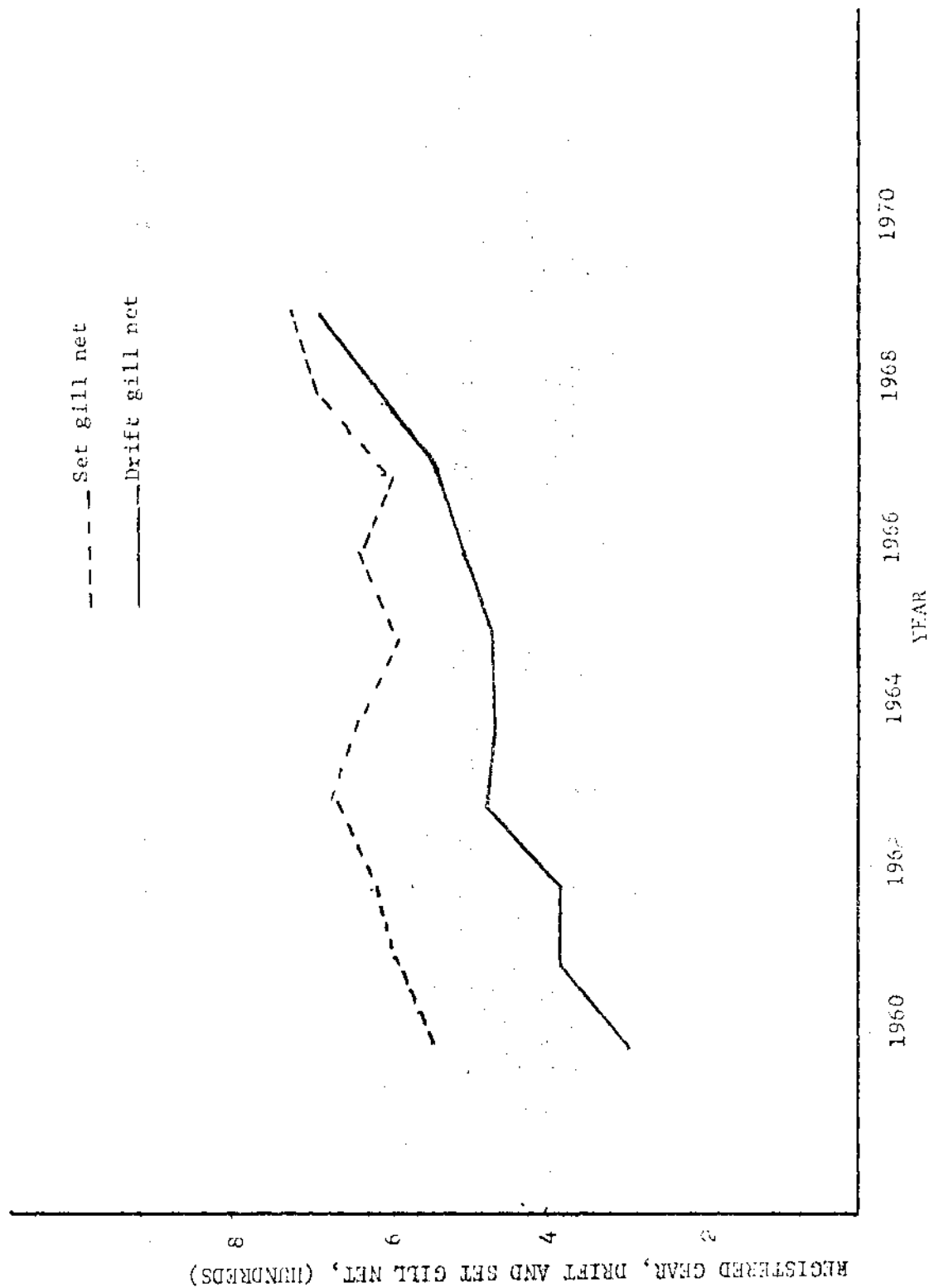


FIGURE 3. Gear registration for drift and set gill nets, Cook Inlet-Resurrection Bay, 1960-1970.

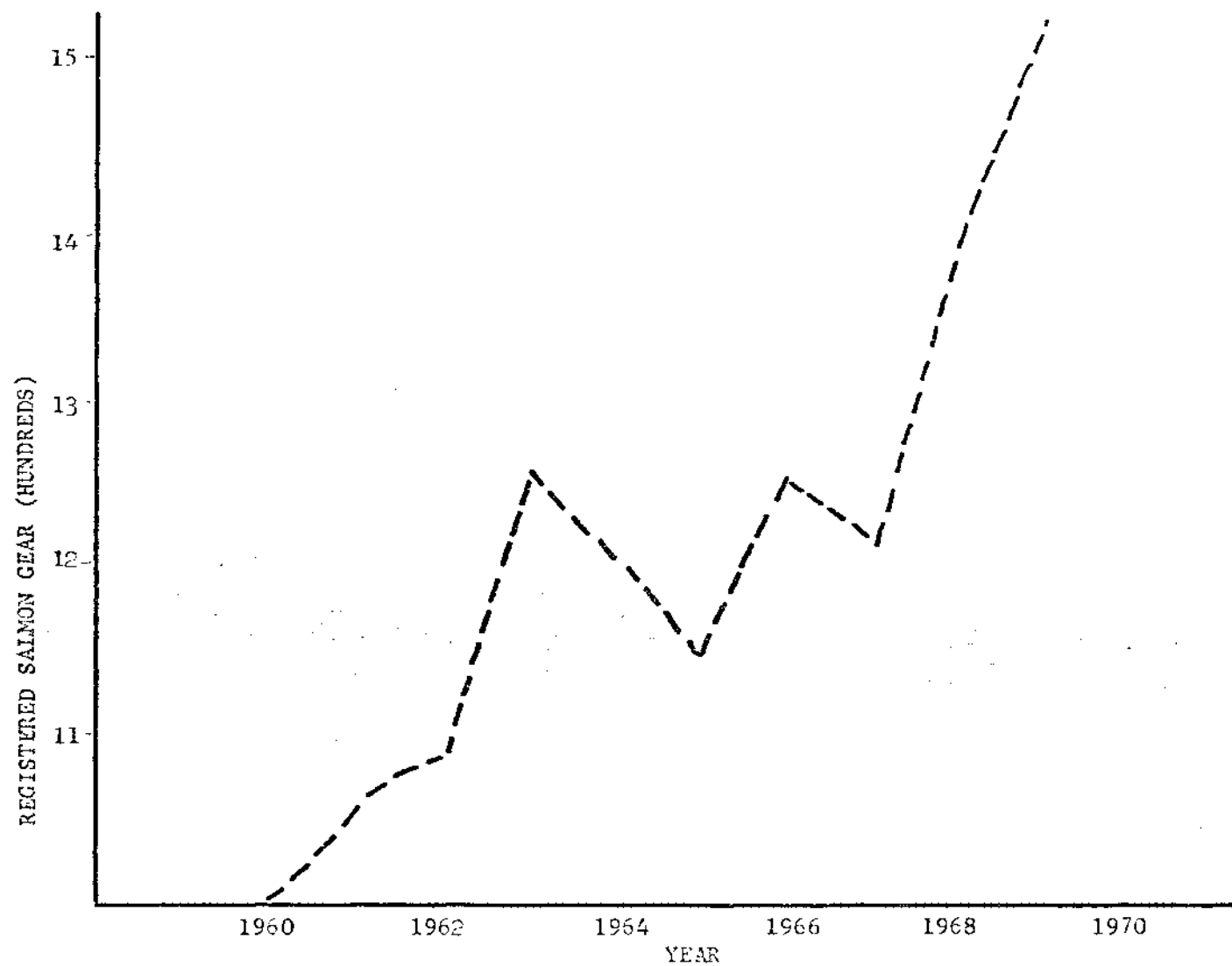


FIGURE 4. Total salmon gear registered for Cook Inlet-Resurrection Bay, 1960-1969

DISTRICT SUMMARIES

Northern District

The total salmon catch for the Northern District was slightly higher in 1969 (78,463) than the 1965 catch of 75,597 salmon, which was the smallest total catch since 1954 for this district.

Red salmon were the most abundant in the catch and contributed 47.8 per cent to the total catch. Cohos were second (24.6 per cent) followed by chums (15.0 per cent), pinks (8.9 per cent), and kings (3.7 per cent) (Table 4.).

The Northern District fishermen caught 5.3 per cent of the total Cook Inlet salmon catch.

The most significant factor concerning the 1969 catch in this district was the number of kings caught (2,922). This was the largest catch taken since the closure to commercial fishing in 1964 (Table 4.). The largest catch of the season occurred during the third period, June 23, when over 900 kings were taken.

During this same period all known key king salmon streams were flown to determine levels of escapement. All systems looked good for this early in the season (Table 5.).

As stated previously base fishing time was set for the Northern District at three 12-hour periods per week prior to July 15 and commencing July 15 two 12-hour periods was set as base time.

Only two emergency orders were issued in 1969 that altered the above schedule: the first was issued for Monday, July 28, which curtailed one 12-hour period. The second order issued took effect Wednesday, August 13, and closed the Northern District to commercial salmon fishing for the remainder of the year. Both orders were based on insufficient numbers of red, chum, and silver salmon in the fishery and on the spawning grounds.

TABLE 4. Salmon catch, by species, Northern District, 1954-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1954	22,585	120,508	139,464	347,040	84,571	714,168
1955	20,522	52,927	46,365	3,226	40,321	163,361
1956	18,457	114,612	80,322	398,851	169,545	781,787
1957	21,422	90,431	44,416	1,678	101,454	259,401
1958	9,308	69,222	100,813	408,043	92,227	679,613
1959	13,222	134,930	41,230	2,348	50,699	242,429
1960	8,218	148,247	144,377	442,185	117,739	860,766
1961	7,755	77,374	40,975	10,765	61,103	197,972
1962	9,778	130,934	172,562	279,599	143,757	736,630
1963	7,345	109,463	63,540	8,940	43,694	232,982
1964	168	160,264	167,928	586,386	126,958	1,041,704
1965	300	31,412	21,752	4,848	16,775	75,087
1966	404	131,080	80,550	371,960	35,598	619,592
1967	184	118,065	43,854	8,460	38,384	208,947
1968	471	140,575	156,648	534,839	58,454	890,987
1969	2,932	37,523	19,293	6,993	11,732	78,463
1970	1,458					
1971	9,595					
16 year average	8,941	104,223	85,256	213,510	74,563	486,493
Per cent	1.8	21.4	17.5	44.0	15.3	100.0

TABLE 5. Susitna drainage, king salmon escapement survey, June 24, 1969.^{1/}

Stream	No. Kings	Remarks
Alexander Creek	30	Poor observing - water colored
Lake Creek	350	Excellent obs. - ten miles above mouth
Camp Creek	0	Too early
Clear Creek	125	Excellent obs. - two miles of mouth
Montana Creek	50	Excellent obs. - all at mouth
Sheep Creek	250	Excellent obs. - all at mouth
Little Willow Creek	150	Excellent obs. - all at mouth
Big Willow Creek	100	Excellent obs. - all at mouth
Little Susitna River	10	Spot check only
Deshka River	2,300	Sonar count

^{1/} The majority of salmon were mature and red in color, seemed to be holding at mouth.

Red, chum, and silver catches in the Northern District have been decreasing every fourth year since 1957. This trend, coupled with the fact that escapement surveys of this particular cycle have shown the same trend, is reason for alarm. If this trend continues these three species are in danger of being depleted (Figures 5, 6, and 7.).

Salmon escapement into the Susitna drainage in 1969 was a failure except for evidence of a buildup in king salmon.

Aerial survey conditions were ideal in 1969 for escapement estimates of king salmon. In addition to aerial surveillance a Bendix sonar counter was employed on the Deshka River to count king salmon into this key king salmon stream. The 1969 king salmon escapement was excellent with the Deshka River, Alexander and Lake Creek receiving the largest number of spawners to clear water systems in the drainage. However, it should be remembered that the clear water systems will be the slowest to recover due to the high degree of pressure exerted by the sports fishery. At this time we have no indication of what the spawning populations are in the large glaciated rivers of the Susitna basin. Biologists do agree that these populations are probably of significant numbers.

As an indication or index of red salmon escapement into the Susitna basin the counts of the Fish Creek counting site have been used in the past, and these are probably indicative of escapement trends for other streams in this system. To sum up the red salmon escapement into Fish Creek in 1969 was a dismal failure. From July 1 through July 31, 6,233 red salmon passed the weir site. This is the lowest escapement on record since 1938 (Table 6.).

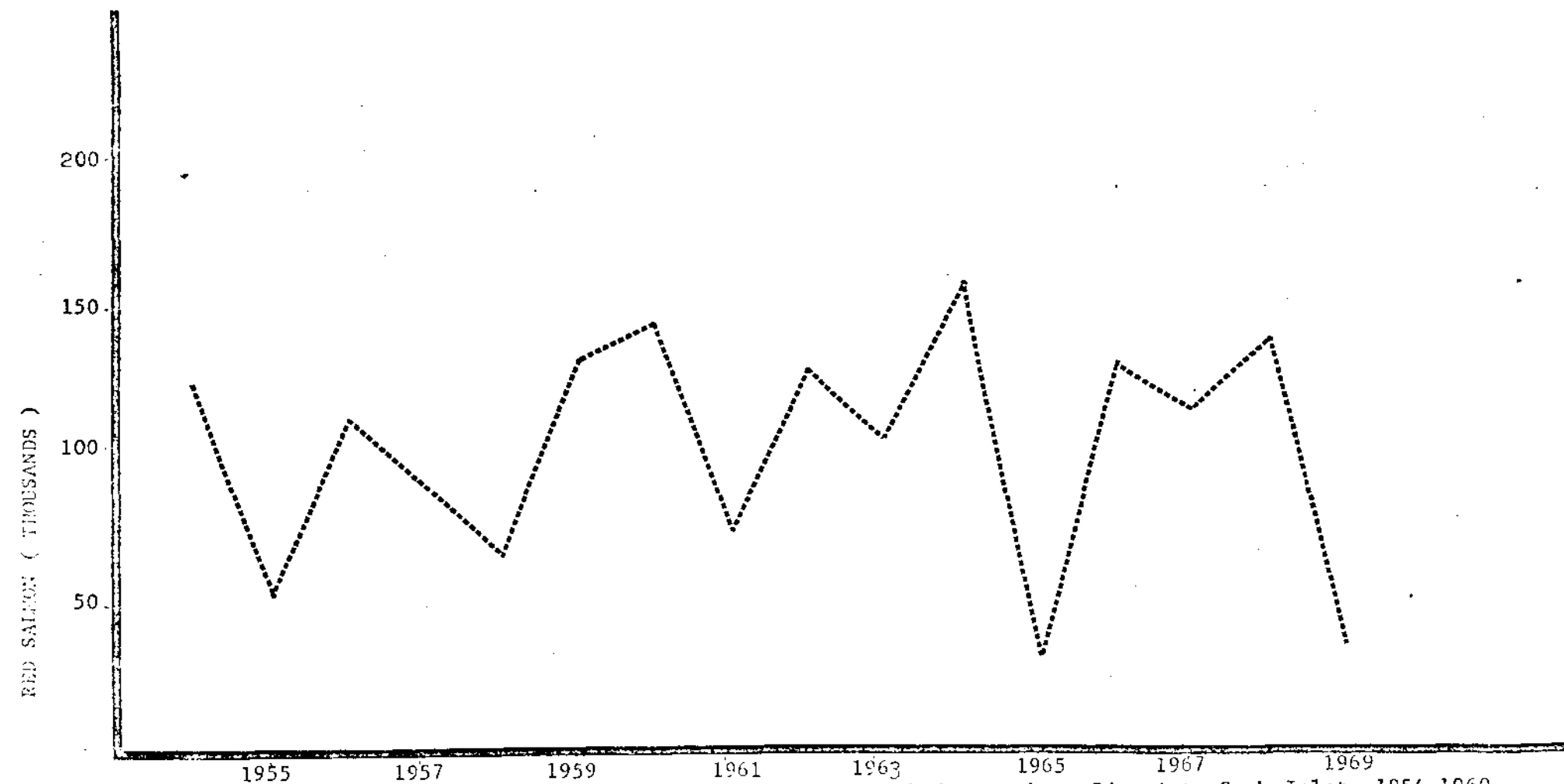


FIGURE 5. Red salmon catches, depict decline of four-year cycle fish, Northern District, Cook Inlet, 1954-1969.

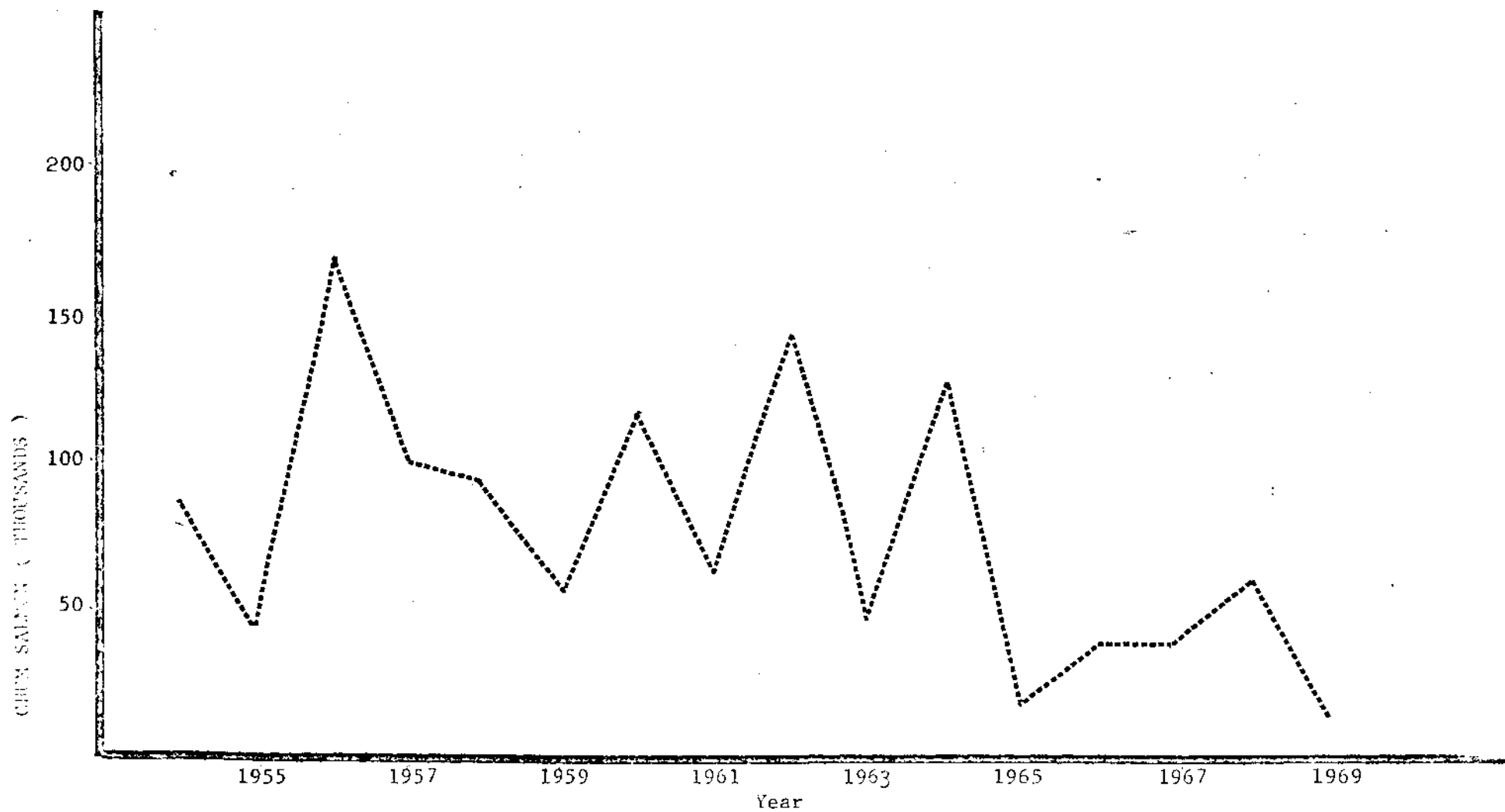


FIGURE 6. Chum salmon catches, depict decline of four-year cycle fish, Northern District, Cook Inlet 1954-1969.

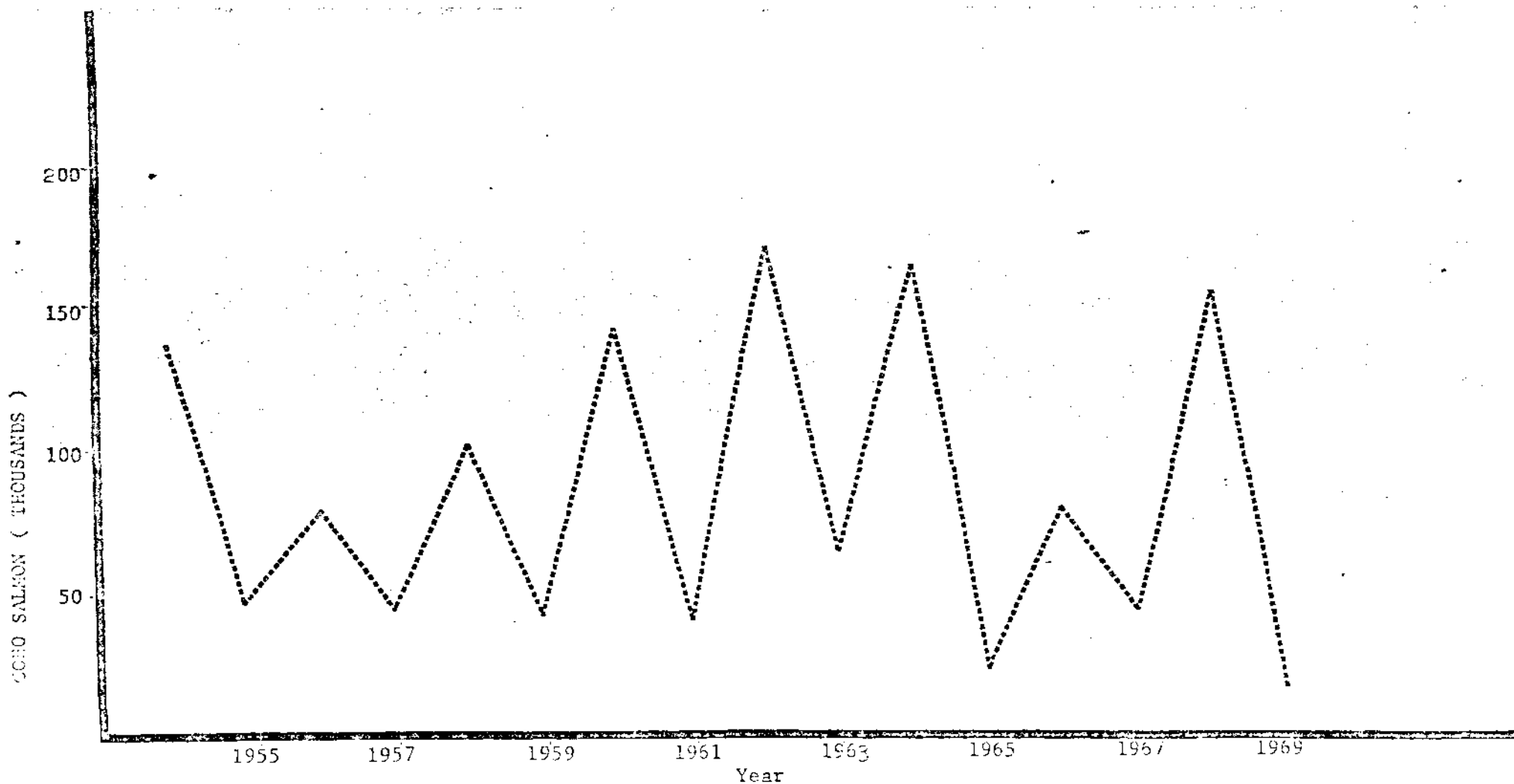


FIGURE 7. Silver salmon catches, depict decline of four-year cycle fish, Northern District, Cook Inlet, 1954-1969.

TABLE 6. Fish Creek red salmon escapements, 1938-1969.^{1/}

Year	Escapement	Year	Escapement
1938	182,463	1958	26,000
1939	116,558	1959	77,000
1940	305,982	1960 ^{2/}	80,000
1941	55,077	1961	40,000
1942	Poor	1962	60,000
1943	Fair	1963	105,000
1944	Good	1964	65,000
1945	Poor	1965	16,544
1946	57,000	1966	41,312
1947	150,000	1967	22,624
1948	150,000	1968	20,000
1949	68,240	1969	6,233
1950	29,654	1970	
1951	34,704	1971	
1952	92,724	1972	
1953	54,345		
1954	23,287		
1955	37,000		
1956	42,663		
1957	15,630		

^{1/} Escapements from 1938-1959 were taken from U. S. Fish and Wildlife Annual management reports.

^{2/} Escapements from 1960 to present are counts for the month of July only for comparative purposes and were collected by Alaska Department of Fish and Game, Commercial Fisheries Division, personnel.

North and South Central Districts

The catch for the North and South Central Districts since 1954 has averaged 67 per cent of the total Cook Inlet-Resurrection Bay salmon catch. The 1969 catch was about normal with 68.4 per cent of the total catch taken in these two districts.

Of the total 1,008,425 salmon caught, 653,436 or 64.8 per cent were reds and 237,476 or 23.5 per cent were chums. Cohos, pinks, and kings contributed 8.1, 2.6, and 1.0 per cent respectively.

The 1969 catch is ranked 15 during the period 1954 to 1969, with 1959 being 16 or the low year (Table 7.).

Two emergency orders were issued in 1969, the first closed the two districts Monday, July 28, for twelve hours due to insufficient numbers of red, chum, and silver salmon in the fishery and escapement. The second emergency order took effect August 13 and allowed three 12-hour periods per week or one extra 12-hour period over the base, set at two 12-hour periods per week. The justification given was that there were sufficient numbers of silvers both in the fishery and escapement to allow extra time with the small amount of fishing gear left in the districts.

The Kenai and Kasilof Rivers are thought to be the two main producers of red salmon in Cook Inlet. A sonar fish counter has been used the past three seasons on the Kenai and Kasilof Rivers to obtain an estimate of escapement. These two sites were plagued with high water and large amounts of debris in the rivers early in the year, and counts of salmon obtained during this period are probably not valid.

TABLE 7. Salmon catch, by species, North and South Central Districts, 1954-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1954	41,195	1,086,538	182,061	1,842,267	425,497	3,577,558
1955	25,404	974,601	124,412	98,454	208,022	1,430,893
1956	46,518	1,144,177	117,867	1,196,524	612,506	3,117,592
1957	20,831	553,281	81,018	19,550	900,016	1,574,696
1958	13,419	408,170	138,952	1,240,505	379,470	2,180,516
1959	19,426	471,966	61,619	10,506	239,134	802,651
1960	19,294	785,292	167,125	981,465	542,258	2,495,434
1961	11,982	1,084,929	76,803	23,252	288,525	1,485,491
1962	10,432	1,016,639	177,762	2,432,090	864,177	4,501,100
1963	10,191	833,517	133,600	21,496	343,333	1,340,137
1964	4,363	809,791	285,713	2,645,575	952,128	4,697,570
1965	9,441	1,380,775	131,717	19,049	299,538	1,840,520
1966	8,121	1,721,369	209,353	1,634,416	497,223	4,070,482
1967	7,675	1,261,997	133,875	23,769	258,453	1,685,769
1968	4,065	964,321	312,112	1,742,154	1,049,449	4,072,101
1969	9,475	653,436	81,699	26,339	237,476	1,008,425
16 year average	16,364	946,925	150,981	872,338	506,075	2,492,683
Per cent	0.6	38.0	6.1	35.0	20.3	100.0

Our research section feels that prior to June 15 all counts should be discarded; based on this, the Kenai had approximately 54,000 red salmon pass the counters from June 15 through August 8. The Russian River, which receives a proportion of the total Kenai run had approximately 35,000 reds pass the weir during the period July 16 through August 18. If the counts are reliable the Russian River received 65 per cent of the total run of the Kenai River. To management this seems a rather high per cent and probably needs more investigation.

A sonar counter was in operation June 13 through August 8 on the Kasilof River and indicated an escapement of 46,000 red salmon.

In the past, local biologists have felt that the Kenai should receive 150,000 as adequate red escapement, and the Kasilof 75,000. If this is true and the sonar counts reliable then both systems were below the desired levels of escapement. However, current thinking is that we do not have adequate information to set ranges or optimum escapement goals for these two systems.

For detailed information concerning the operation and methods used at the sonar sites refer to the 1969-70 Sockeye Salmon Investigations, Sub-Project No. 5-18-R-1 report, prepared by Allen S. Davis and Paul Kissner. Copies of this report can be obtained from the Anchorage or Homer office by request.

Southern District

The total salmon catch for the Southern District in 1969 was 86,616, and accounted for 5.9 per cent of the total Cook Inlet catch. The catch fell far below the 16 year average of 250,810 for the Southern District, and is the second lowest catch since 1954 (Table 8.).

Pink salmon contributed 81.83 per cent of the catch, followed by reds (14.52 per cent), chums (2.99 per cent), cohos (0.59 per cent), and kings (0.07 per cent).

TABLE 8. Salmon catch, by species, Southern District, 1954-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1954	1,532	22,913	12,235	180,977	150,769	368,426
1955	562	30,848	3,230	565,216	24,398	624,254
1956	310	33,054	4,693	150,486	53,515	242,058
1957	286	19,431	1,507	130,511	57,403	209,138
1958	119	17,731	1,713	209,798	24,096	253,457
1959	74	10,026	709	50,076	15,278	76,163
1960	12	12,292	1,237	250,818	4,100	268,459
1961	39	10,180	1,161	191,911	2,924	206,215
1962	58	16,569	2,095	564,050	9,089	591,861
1963	88	13,142	4,020	99,829	7,695	124,774
1964	84	17,283	8,905	266,489	11,529	304,290
1965	10	11,229	733	90,330	2,459	104,761
1966	60	12,192	4,535	177,544	28,754	223,085
1967	173	26,350	2,393	95,100	23,416	147,432
1968	61	18,716	4,671	154,033	4,518	181,999
1969	59	12,578	513	70,878	2,588	86,616
16 year average	220	17,783	3,397	203,002	26,408	250,810
Per cent	.09	7.09	1.35	80.94	10.53	100.00

The most significant factor affecting the 1969 catch in the Southern District was the combination of a poor showing by all five species of salmon. Ranking catches since 1954 the coho catch was 16, pink catch 15, chum catch 15, red catch 12, and king catch 13.

The fishing season opened on June 2 in the Southern District and base fishing time for set gill nets was from 6:00 a.m. Monday until 6:00 a.m. Wednesday, and from 6:00 a.m. Thursday until 6:00 a.m. Saturday. For seines from 12:01 a.m. Monday to 6:00 p.m. Tuesday, and from 12:01 a.m. Thursday to 6:00 a.m. Saturday.

The fishing season went on schedule from June 2 until July 12, when an emergency order was issued closing the Southern District to seine fishing. The reason for this action was the poor showing of pink salmon in the entire district. Set nets were allowed to remain fishing because fish tickets showed that they were taking very few pink salmon.

The second emergency order, effective July 24, reopened to seining that part of the Southern District between Point Pogibshi and the eastern entrance to China Foot. The area east of China Foot and south and west of Point Pogibshi remained closed to seining. The justification for this opening was the buildup of pink salmon in Seldovia Bay and in Tutka Bay Lagoon.

The third and final emergency order affecting the Southern District established three 24-hour fishing periods a week for set nets and seines commencing August 13. Set net gear in the entire district remained open to fishing and seining remained restricted to that area between Point Pogibshi and the eastern entrance to China Foot. The reason for this reduction of time from two 48-hour periods to three 24-hour periods was the weak showing of silver salmon in the entire Inlet, and the need for more escapement.

Pink salmon escapement in the Southern District was the lowest since 1963. Table 11 lists recorded escapements since 1962 for the major streams of the Southern and Outer Districts of Cook Inlet. The major streams in the Southern District are Humpy, Tutka, Seldovia, and Port Graham. The only major stream with good escapement in the area was Seldovia with 60,000 pinks recorded.

Outer District

The total salmon catch for the Outer District in 1969 was 57,036, and accounted for 3.9 per cent of the total Cook Inlet catch. This catch was the lowest since 1965 and second lowest since 1954 (Table 9).

The catch was made up mainly of pink salmon with 51,533 pinks harvested comprising 90.35 per cent of the total catch. Chums accounted for 9.47 per cent of the catch, reds 0.16 per cent, and cohos 0.02 per cent. There were no kings harvested in the Outer District during 1969.

There were two significant factors affecting the 1969 catch in the Outer District: (1) the continued decline in the four year cycle chum run. The majority of chums are four year fish in the Inlet, thus the parent year for the 1969 run was 1965 and the parent year for 1965 chums was 1961. Looking at chum catches in Table 9 there has been a steady decline since the 1961 cycle. (2) the second factor affecting the 1969 catch was that it fell short of the pink salmon forecast. Based on pink salmon fry sampling in the spring of 1968 a strong run was forecast for the Port Dick area. This run did not materialize and both catch and escapement fell short of expectations.

Seines only are used in the Outer District and base time during 1969 was from 12:01 a.m. Monday to 6:00 p.m. Tuesday, and from 12:01 a.m. Thursday to 6:00 a.m. Saturday. Openings and closures in the Outer District are regulated by emergency order. The first emergency order, effective July 17, opened that portion of the Outer District known as Port Dick to seining. The justification

TABLE 9. Salmon catch, by species, Outer District, 1954-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1954	13	4,927	369	82,205	112,877	200,391
1955	7	701	277	557,997	40,887	599,869
1956	23	2,889	190	42,368	19,248	64,718
1957	13	2,982	110	149,197	138,171	290,473
1958	1	1,719	83	739,768	100,386	841,957
1959	3	10,365	109	68,875	65,675	145,027
1960	4	1,336	533	328,501	67,187	397,561
1961	2	12,595	444	105,447	40,204	158,692
1962	2	8,697	1,893	1,684,023	126,750	1,821,365
1963	6	1,974	369	21,462	116,923	140,734
1964	2	1,370	431	767,396	269,512	1,038,711
1965	0	1,965	7	21,816	22,443	46,231
1966	1	2,710	357	398,751	87,620	489,439
1967	2	2,165	56	259,951	37,533	299,707
1968	1	1,550	106	191,691	20,283	213,631
1969	0	92	11	51,533	5,400	57,036
16 year average	5	3,627	334	341,936	79,444	425,346
Per cent	-	0.85	0.08	80.39	18.68	100.00

for the opening was that chum salmon were present in Port Dick in sufficient numbers for both escapement and harvest.

The second emergency order affecting the Outer District closed the Port Dick area to fishing effective July 21. The surplus of chum salmon had been taken, and all remaining fish were needed for escapement. Pink salmon were not present in sufficient numbers to warrant a harvest.

The third and final emergency order issued for the Outer District reopened the Port Dick area on August 14. Sufficient numbers of chum and pink salmon were available for both escapement and harvest.

Escapement for all major pink salmon streams of the Outer District, except for the left fork of Windy River, was weak. Table 11 lists the recorded escapements since 1962 in the major streams of the Southern and Outer Districts. The major streams in the Outer District are Windy Left, Windy Right, Rocky, Port Dick, and Island Creek.

Kamishak District

The total 1969 Kamishak Bay District salmon catch of 144,218 was the second highest since 1954, exceeded only by the 1968 catch of 248,307 (Table 10.). The third largest pink salmon harvest (76,459) since 1954 accounted for 53.01 per cent of the total catch and the largest chum salmon catch (52,936) since 1954 made up 36.71 per cent of the total catch. The red salmon catch of 10,727 was also the largest since 1954 and made up 7.44 per cent of the total catch. Cohos made up 2.84 per cent of the 1969 catch. There were only two king salmon reported in the Kamishak area during 1969.

The increased catch in the Kamishak District during 1968 and 1969 can be attributed mainly to an increase in effort. In previous years it was common

TABLE 10. Salmon catch, by species, Kamishak District, 1954-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1954		No fishery				
1955		2	8	5,121	278	5,409
1956		67	701	193	14,936	15,897
1957		4,335	29	5,905	10,856	21,125
1958		No fishery				
1959		1,549	43	5,325	25,759	32,676
1960	11	768	28	11,563	44,328	56,698
1961		1	14	6,019	12,465	18,499
1962		20	11	219	6,058	6,308
1963	1	4	97	82,314	13,892	96,308
1964	5	1,979	115	20,719	42,280	65,098
1965		808	4	3,452	2,706	6,970
1966		21	247	2,945	12,688	15,901
1967	1	182	74	17,340	24,221	41,818
1968		492	101	198,253	49,461	248,307
1969	2	10,727	4,094	76,459	52,936	144,218
14 year average	1	1,497	398	31,130	22,347	55,373
Per cent	-	2.70	0.72	56.22	40.36	100.00

TABLE 11. Southern and Outer districts estimated pink salmon escapements in thousands of fish^{2/}.

Stream	1962	1963	1964	1965	1966	1967	1968	1969	8 yr. average
Humpy	56.0	34.7 ^{1/}	18.5 ^{1/}	28.0 ^{1/}	30.0	25.0	24.7	5.4	27.8
Tutka	30.0	10.0	20.0	20.0	12.0	7.0	7.9	6.5	14.2
Seldovia	50.0	15.0	60.0	30.0	86.0	55.0	53.2	60.0	51.2
Pt. Graham	50.0	2.0	16.0	1.5	24.0	2.0	24.4	4.0	15.5
Windy L.	12.5	4.5	7.7	10.0	7.0	6.0	6.9	23.0	9.7
Windy R.	12.5	4.9	6.2	2.0	7.0	6.0	2.8	3.2	5.6
Rocky	200.0	12.0	80.0	.3	44.0	1.0	43.1	1.0	47.7
Pt. Dick	40.0	16.0	31.5	50.0	35.0	20.0	29.0	12.0	29.2
Island	15.0	3.6	30.0	.5	7.0	.5	4.3	.1	7.6
Total ^{3/}	466	103	270	142	252	123	196	115	209

^{1/} Weir count

^{2/} Escapement estimates were derived from peak counts or calculated from counts made throughout the spawning season. When series counts were available the total fish/days was divided by average stream life (2.5 wks.) to estimate total escapement.

^{3/} Rounded to nearest thousand.

to have only two to five boats fishing the area, whereas during the past two years between six and ten boats have been engaged in the fishery. Also, weather conditions in both 1968 and 1969 were unusually good for the Kamishak area. The early opening of June 16 in 1969 was the main factor in the large red catch. In past years the season was opened by field announcement in late June or early July, and by that time reds were not available to the fishery.

The 1969 Kamishak catch contributed 9.8 per cent to the total Cook Inlet catch. This is probably the most significant fact concerning the 1969 fishery in the Kamishak Area. In past years, except for 1968, this area has never accounted for over 1.00 per cent of the total Inlet catch. The Kamishak Bay fishery is becoming increasingly more important and more effort will be put into the management of this fishery in future years.

Seines only are permitted in the Kamishak District and base time during 1969 was seven days per week. The season opened on June 16, which was a departure from past years when the season was opened by emergency order. There were no emergency orders issued affecting the Kamishak area during 1969.

There were not enough surveys made in the Kamishak District during 1969 to adequately evaluate escapement. In general, chum escapement was poor to fair in the McNeil and Kamishak systems, and fair to good in the Cottonwood and Iniskin systems. Pink salmon escapement was fair to good in three of the major systems surveyed during August (Bruin Bay, Rocky Cove, and Ursus Cove). More effort will be put into evaluating escapement in these systems during 1970.

Eastern District

The Eastern District is the least important commercial salmon producing district in the area. Based on a thirteen year average it has contributed 1.1 per cent of the total Cook Inlet-Resurrection Bay catch. This district produced 6.7 per cent of the total area catch in 1969; however, this was based on the unusually high catch of reds (Table 12.). This high catch of reds occurred in 1968 (74,500) and 1969 (99,099) due to rehabilitation of Bear Lake in 1964.

Five emergency orders were issued for the Eastern District in 1969, based primarily on the red salmon returns from the 1964 brood year. The 1969 commercial fishing regulations called for the seine and drift gill net gear season to be opened and closed by emergency order before July 1.

The first emergency order opened the Eastern District 6:00 a.m. Monday, May 27, to seven days per week fishing until closed by emergency order. This order had a two-fold justification (1) red salmon were beginning to enter Resurrection Bay, and (2) the Sport Fish Division planned to rehabilitate Bear Lake in 1969 by killing all predators and competitors present in the lake, thus making the lake unfit for spawning purposes for 1969. Knowing the above, sound management dictated full utilization of reds returning to this area.

However, before the second emergency order was issued the Sport Fish Division had a change of plans for Bear Lake and decided not to rehabilitate in 1969. Upon learning this information, the Commercial Fisheries Division had to take action to insure what was thought to be adequate escapement (15,000). The second emergency order curtailed fishing from seven days per week to four, i.e., from 6:00 a.m. Thursday until 6:00 a.m. Saturday and from 6:00 a.m. Monday to 6:00 a.m. Wednesday. This order was effective June 15.

TABLE 12. Salmon catch by species, Eastern District, 1954-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1954	0	11,786	2,556	7,562	1,945	23,849
1955	4	5,049	6,160	55,994	3,147	70,354
1956	0	296	3,761	14,873	519	19,450
1957	140	169	119	0	20	428
1958	0	0	0	200	0	200
1959	58	5,477	8,954	125	14,612	29,226
1960	0	105	853	8,720	467	10,145
1961			No fishery			
1962	0	0	3,728	49	10	3,787
1963	1	1	2,250	11	0	2,263
1964	0	22	22	813	12	869
1965			No fishery			
1966			No fishery			
1967	0	348	203	3,097	275	3,923
1968 ^{1/}	3	74,484	5	41,464	872	116,827
1969	3	99,079	6	1	10	99,099
13 year average	14	15,140	2,201	10,224	1,684	29,263
Per cent	0.05	51.74	7.52	34.94	5.75	100.00

The third emergency order took effect at 6:00 a.m. Wednesday, June 18, to close the Eastern District to seine and drift gill net fishing. At this time our escapement into Bear Lake was 7,000 reds, 8,000 short of the desired escapement.

The fourth order was effective 6:00 a.m. Wednesday, July 2, and opened the district to seine and drift gill net fishing until closed by emergency order. At this time Bear Lake escapement had reached 12,000 reds with several thousand in Bear Creek.

The fifth and final order for the season for the Eastern District closed seine and drift gill net fishing for the season. The order took effect at 6:00 a.m. Saturday, July 5, based on the evidence that good numbers of silver salmon were showing in the fishery and reds were so few a fishery was not warranted.

TABLE 13. Intents to operate, Cook Inlet-Resurrection Bay area, 1969.

Company	Location	Salmon ^{1/}	Halibut	Herring	King Crab	Dung. Crab	Tan. Crab	Shrimp	Other ^{2/}
Alaska Frozen Products	Anchorage	F	X	X	X	X		X	HR, SR
Alaskan Scallop Processors	Seward	F	X						Scallops
Alaskan Seafoods, Inc.	Homer	CF	X	X	X	X	X	X	
Alaska Star, Inc.	Spenard	CF							
Berman Packing Co.	Ninilchik	CF	X					X	
Brinkley, Marjorie	Sterling	C							
Columbia-Wards Fisheries	Kenai	C							SR
Conway, Stanley	Anchorage	C	X		X	X	X	X	Scallops, Clams
Dans Cold Storage	Ninilchik	C	X					X	HR, Clams
Deitz, Bud	Homer	C	X						Clams
Ekren Packing Co.	Kasitsna Bay	C			X	X			
Gardner Seafoods	Homer	F	X	X	X	X	X	X	HR, Clams
International Seafoods, Inc.	Halibut Cove	F							HR, SR
Jensen, Torvald and Co.	Ninilchik	F							
Moser, Luba	Clam Gulch	S							
Osmars Ocean Specialties	Clam Gulch	CF							
Kenai Packers	Kenai	C							
Keener, Leonard A.	Soldotna	FS							
R + F Fisheries	Anchorage	S	X	X	X	X	X	X	
R-Lee Company	Soldotna	FS	X						
R.P.M. Fisheries	Anchorage	FS	X						Whitefish, Sheefish
Sea Systems	Seward								HR

continued

Company	Location	Salmon ^{1/}	Halibut	Herring	King Crab	Dung. Crab	Tan. Crab	Shrimp	Other ^{2/}
Simon, Charles L.	Kasilof	CF	X						
Snug Harbor Packing Co.	Snug Harbor	C							
Theodore's Seafoods, Inc.	Anchorage	F							
Tidewater Packing Co.	Anchorage	C							
Wakefield Fisheries	Seldovia		X		X				
Waterfall Fisheries Corp.	Soldotna	CF							
W. P. Johnson, Jr.	Anchorage	SF	X		X	X	X		Scallops, Sheefish
Whitney-Fidalgo Seafoods	Anchorage	C							SR
Whitney-Fidalgo Seafoods	Port Graham	C							SR, HR

^{1/} C - Canned
F - Frozen
S - Smoked

^{2/} SR - Salmon Roe
HR - Herring Roe

Total Processors - 31 29 14 4 8 7 5 7

1969 INTENT TO OPERATE

There were a total of 31 operators that filed Intent to Operate forms in 1969. Out of the total, 29 filed to process canned and frozen salmon, 14 halibut, 4 herring, 8 king crab, 7 Dungeness crab, 5 tanner crab and 7 shrimp. In addition, processing of herring roe, salmon roe, scallops, clams, sheefish, and whitefish were indicated (Table 13.).

SALMON PROCESSING

Case Pack

The total 1969 salmon pack, in 48 pound cases, was 175,061 cases. For an odd-year pack it was very near the five year average of 174,749 cases. The two most significant factors of this year's case pack were the coho and pink pack. Cohos made up the smallest pack of any year since 1960 and pinks made up the largest odd-year pack since 1960. In fact, pinks were comparable to the ten year average of 86,216 cases (Table 2.).

Fresh-frozen and Cured

The first wholesale value of all fresh-frozen and cured salmon production was estimated at \$879,334. Red salmon and king salmon made up the bulk of the 2,302,117 total pounds with each contributing 1,016,044 and 415,328 pounds respectively. This was the highest production of these two species since 1960 (Table 14.). In fact, kings exceeded the ten year average by 318,349 pounds and reds exceeded the ten year average by 710,256 pounds.

TABLE 14. Pounds of salmon frozen and smoked, by species, Cook Inlet-Resurrection Bay, 1960-1969.

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1960*	51,569	86,726	90,472	64,860	10,876	304,503
1961*	40,305	14,308	122,966	199,670	28,241	405,490
1962*	41,326	7,821	367,984	53,922	67,211	538,264
1963*	68,240	15,115	65,547	1,384	3,895	154,181
1964	10,488	0	0	0	0	10,488
1965	86,561	585,936	81,234	15,000	119,912	888,693
1966	46,307	496,815	89,794	1,083,986	437,995	2,154,897**
1967	137,747	350,318	223,748	11,974	181,569	905,356
1968	71,923	484,745	732,096	350,768	647,350	2,286,882
1969 ^{2/}	415,328	1,016,044	209,922	67,075	593,748	2,302,117
10 year average	96,979	305,788	198,376	184,864	209,080	995,087
Per cent	10.0	30.7	19.9	18.6	21.0	100.0

1/ Statistics from 1960-1968 were taken from the 1968 Alaska Department of Fish and Game annual management report.

2/ Statistics for 1969 were taken from the Alaska Department of Fish and Game final Mimeo #1 report.

* Converted to pounds

** Includes estimated pounds delivered to Japanese ships. (1,107,399#)

SHELLFISH FISHERY

King crab catch

The 1969 total catch of king crab in Cook Inlet was 9,857,170 pounds. This was the second lowest harvest since 1960. Catches by district, by year, since 1951 appear in Table 15. The Southern District (Kachemak Bay) and the Kamishak District contributed almost equally to the catch, with 1.3 and 1.4 million pounds respectively. The Outer District harvest was 130,988 pounds (Table 16.).

The biggest months of production were August and September when 1.0 and 1.0 million pounds were caught respectively. These two months together accounted for 77.8 per cent of the 1969 total catch. The catch for both August and September were the highest on record for these months, (Table 17.). These high catches can be attributed largely to the fact that the season was closed from March through July and some of the crab which would normally be caught in these months were available to the fishery in August and September. This was also true for 1968 when large catches were made in the same two months. In 1967 only the months of May and June were closed to crab fishing and prior to 1967 crab fishing was allowed year round except for brief spring closures.

Lengths and Weights

The low harvest in 1969 (9.8 million pounds) does not indicate a decline in the resource as there are several indicators that show our crab stocks to be in good condition. Length frequencies of legal male crab delivered to the canneries have not shown any drastic decline when compared with earlier

TABLE 15. Cook Inlet king crab catch in pounds, by district, 1951-1969.

Year	Washburn	Kamishak	Outer	Eastern	Total
1951	6,619				6,619
1952	2,900				2,900
1953	1,359,854				1,359,854
1954	1,275,850				1,275,850
1955	1,915,801				1,915,801
1956	2,129,035				2,129,035
1957	620,858				620,858
1958	752,990				752,990
1959	2,191,437				2,191,437
1960	4,219,776		67,656		4,287,432
1961	4,256,396	1,05,679	61,837		4,323,912
1962	6,851,601	4,305,444	577,197		11,734,242
1963	8,381,163	5,538,349	175,535		13,995,047
1964	6,772,392	4,967,804	43,908		11,784,104
1965	2,776,547	963,412			3,739,959
1966	3,909,163	1,974,559	37,656		5,921,378
1967	3,124,509	1,821,069	16,033	418	4,962,029
1968	4,008,933	2,965,658	39,112		6,993,703
1969	2,857,170	1,422,587	130,938		4,410,695

TABLE 16. Cook Inlet king crab catches by district, 1969.

Month	Southern District		Kamishak District		Outer District		Totals	
	Crab	Pounds	Crab	Pounds	Crab	Pounds	Crab	Pounds
January	1,933	16,566	1,105	9,852	6,198	54,260	9,236	80,678
February	11,777	91,042	3,885	42,917	2,885	28,868	18,547	162,827
March								
April								
May								
June								
July								
August	83,111	603,567	67,357	526,857	6,345	47,800	156,813	1,178,224
September	65,638	459,065	75,923	583,333			141,561	1,042,398
October	13,401	93,752	23,814	199,101			37,215	292,853
November			1,008	8,045			1,008	8,045
December	5,062	39,663	5,722	52,482			10,795	92,145
Totals	180,922	1,303,655	178,835	1,422,587	15,428	130,928	375,175	2,857,170

TABLE 17. Cook Inlet king crab catch in pounds, by month, 1963-1969.

Month	1963	1964	1965	1966	1967	1968	1969
January	156,697	165,752	123,228	60,189	20,456	38,095	80,678
February	847,221	336,459	52,019	318,031	149,861	368,975	162,827
March	449,132	526,354	626,006	255,749	324,234	937,176	
April	587,187	733,497	372,276	580,428	580,984	363,742	
May	628,420	411,023	220,572	502,257		563	
June	1,791,634	776,858	252,311	632,303			
July	1,808,687	2,083,318	507,765	652,339	893,904		
August	1,078,313	1,164,270	523,125	530,513	816,891	1,153,828	1,178,224
September	638,258	345,781	72,179	226,607	247,822	638,954	1,042,398
October	243,065	148,703	1,018	14,746	69,179	332,890	292,853
November	34,912	47,827	9,137	55,978	11,788	109,371	8,045
December	117,637	32,550	16,911	71,023	9,390	65,339	92,145
Totals	8,381,163	6,772,392	2,776,547	3,900,163	3,124,509	4,008,933	2,857,170

years of the fishery. The Kamishak Bay size distribution in 1969 was almost exactly the same as it was in 1962. Average weights of crab, by individual months during 1969, compared favorable with average weights by month since 1962. (Data on lengths and weights will be summarized in a Cook Inlet king crab status report to be published at a future date. The average weight for the entire 1969 season was 7.21 pounds, or about one pound below the average from the past ten years, (Table 18.). This is due directly to the fact that in 1969 a much larger percentage of crabs were harvested in the months of August and September when average weights are at their lowest.

Catch per unit of effort

The catch per unit of effort in 1969 was the highest on record for Kamishak Bay with 2,625 crab per landing. In Kachemak Bay there were 288 crab per landing, the third highest since 1960 (Table 19.). This is just one more indication that the stocks are in good shape. The fishing was good when fishermen were able to fish.

Discussion

There are two main reasons for the low harvest this year. One is that during the season in which king crab fishing is now allowed, i.e. August through February, there are only three months in which weather conditions are normally favorable in Cook Inlet. These are August, September, and February. From October through January there is normally very little effort due to weather conditions. This is true for both the small boat fleet (40' average size) fishing Kachemak and the large boat fleet (75' average size) fishing Kamishak. When average catches since 1960 are ranked by months the top five months for Kachemak Bay have been July, August, March, February, and June in that order. Under the current season only two of these months are

TABLE 18. Cook Inlet king crab average weights, 1960-1969.

Year	Kemishak Bay average weight	Kachemak Bay average weight
1960	No fishery	9.2
1961	8.6	8.5
1962	9.1	8.2
1963	8.7	8.1
1964	8.4	7.9
1965	8.9	8.2
1966	8.7	8.5
1967	8.5	7.9
1968	8.9	8.3
1969	7.9	7.7
Total average	8.6	8.2

TABLE 19. Cook Inlet king crab catch per landing, 1960-1969.^{1/}

Year	Landings	Crab	Crab per landing	Total Pounds
<u>Kachemak</u>				
1960	2434	455,000	187	4,219,776
1961	2619	364,045	139	3,108,352
1962	1843	296,123	160	2,546,177
1963	1435	347,096	241	2,842,814
1964	1019	229,165	225	1,804,568
1965	742	217,544	293	1,787,420
1966	681	226,557	332	1,925,604
1967	705	164,335	233	1,303,240
1968	659	128,720	195	1,043,275
1969	681	196,350	288	1,434,583
<u>Kamishak</u>				
1960	None			
1961	181	140,566	776	1,215,766
1962	372	473,601	1273	4,305,444
1963	445	635,225	1427	5,538,349
1964	401	589,796	1470	4,967,824
1965	79	108,019	1367	963,412
1966	121	225,537	1863	1,974,559
1967	99	213,285	2154	1,821,269
1968	177	331,439	1873	2,965,658
1969	66	178,825	2625	1,422,587

^{1/} Outer District data included with Kachemak Bay.

now being fished. In Kamishak Bay the peak production months have been July, June, August, April, and May. Only one of these months is now being fished.

The other reason for the low harvest in 1969 was the lack of effort. There were only 29 boats that fished for king crab in Cook Inlet during 1969, compared to 44 boats in 1968, 34 boats in 1967 (Table 20.). One reason for this reduction in vessels was the quota (4.5 million pounds) established for Cook Inlet by the Board of Fish and Game during the spring meeting in 1969. Some of the larger vessels which formerly fished Cook Inlet registered for the Kodiak area because their owners feared that the quota would be reached early and that they would be out of business for the rest of the year.

In summary, the low king crab harvest in Cook Inlet during 1969 was not due to a decline in the resource, but was the result of a shortened season and lack of effort.

TABLE 20. Number of boats fishing king crab, Cook Inlet, 1965-1969.

Year	Number of boats
1965	23
1966	33
1967	34
1968	44
1969	29

Tanner Crab

1968 was the first year of any commercial production of tanner crab in Cook Inlet. Due to the shortened king crab season a tanner fishery developed to keep the fishermen and canneries in operation. A total of 54,638 tanner crab were caught in 1968, weighing 165,147 pounds. The peak month of production was May, when 26,243 crab weighing 80,420 pounds were taken (Table 21.).

In 1969 an increase in fishing effort resulted in a catch of 484,201 crab weighing 1,479,624 pounds. The peak month was April, when 148,469 crab weighing 459,231 pounds were landed. Again, Kachemak Bay in the Southern District was the main area of production (Table 22.).

Fishing for tanners is allowed 12 months of the year except for the last two weeks in July. The only regulation in effect at the present time is the statewide 4" maximum tunnel width requirement.

TABLE 21. Tanner crab landings, by month, in pounds, Cook Inlet, 1968-1969.

Month	1968	1969
January		35,860
February	6,284	144,556
March	8,613	295,993
April	45,200	459,231
May	80,420	177,206
June	5,420	288,750
July		55,935
August	340	
September	490	
October	1,570	10,308
November	1,514	
December	15,296	11,783
Year Totals	165,147	1,479,624

TABLE 22. Tanner crab landings by month, by area, Cook Inlet, 1969.

Month	Southern	Kamishak	Outer	Total
January	35,760	100		35,860
February	117,274	12,298	14,984	144,556
March	295,993			295,993
April	459,231			459,231
May	177,206			177,206
June	288,752			288,752
July	55,935			55,935
August				
September				
October	7,484	2,824		10,308
November				
December	9,232	2,551		11,783
Totals	1,446,867	17,773	14,984	1,479,624

Dungeness crab

The total 1969 dungeness crab harvest in Cook Inlet was 48,501 pounds, the second lowest catch since 1961. (Table 23.) The peak months of production were July, August, and September when 86 per cent of the production took place. Peak effort also took place during these three months when 71 per cent of the landings were made (Table 24.). The reason for the low effort and resulting low harvest in 1969 was the lack of a market. The major dungeness cannery operating in Cook Inlet during 1968 did not continue operations in 1969.

TABLE 23. Cook Inlet dungeness crab catch, 1961-1969.

Year	Crab	Pounds
1961		191,588
1962	204,573	460,725
1963		1,677,204
1964	177,708	421,452
1965	32,378	82,280
1966	45,625	130,499
1967	2,141	7,168
1968		378,941
1969		48,501

TABLE 24. Dungeness crab catch and landings, by month, Cook Inlet, 1969.

Month	Kachemak Bay Pounds	Landings
March	335	2
April	786	2
May	1,608	3
June	3,987	3
July	13,898	9
August	14,876	6
September	13,011	10
Total	48,501	35

Shrimp Catch

The total Cook Inlet catch of shrimp in 1969 was 1,847,202 pounds. This was the second largest harvest of shrimp in the Inlet since 1963 when 1,897,580 pounds were landed (Table 25.). The peak month of production was October when 432,848 pounds were taken. The most effort was also expended in October when a total of 50 landings were made (Table 26.).

The increase in production, beginning in June of 1969, was due to the installation of two shrimp peelers at the Alaska Seafoods cannery at the end of Homer Spit. Two vessels began fishing for the cannery on a quota basis beginning in June. The quota was gradually increased as the plant worked out mechanical, technical, and marketing problems and by the end of the year the quota was increased to near maximum capacity of the two peelers (approximately 30,000 pounds per day). Plans of the cannery for 1970 call for the installation of two additional peelers and one or two more vessels.

Catch per unit of effort

A logbook program was initiated in July and catch per unit of effort data by month is presented in Table 29. The highest catch per unit of effort occurred in September when 46 drag hours resulted in a catch of 167,930 pounds for an average of 3,651 pounds per hour.

TABLE 25. Shrimp landings in pounds, Cook Inlet, 1960-1969.

Year	Trawl	Pots	Total
1960			711,355
1961			1,045,170
1962			532,291
1963	1,897,580		1,897,580
1964	599,665	1,746	601,411
1965	82,280		82,280
1966	285,976	23,383	309,359
1967	741,438		741,438
1968	26,099	561	26,660
1969	1,847,202		1,847,202

TABLE 26. Shrimp catches and landings by month, Kachemak Bay,^{1/} 1969.

Month	Pounds	Cumulative Pounds	Landings
January	1,130	1,130	2
February	3,274	4,404	4
March	1,870	6,274	2
April	11,927	18,201	9
May	4,661	22,862	6
June	104,026	126,888	38
July	158,178	285,066	32
August	249,924	534,990	41
September	345,296	880,286	44
October	432,848	1,313,134	50
November	219,791	1,532,925	32
December	314,227	1,847,202	24
Totals	1,847,202	1,847,202	284

^{1/} All shrimp harvested in Cook Inlet during 1969 were trawl caught in Kachemak Bay.

TABLE 27. Catch per unit of effort, shrimp, in pounds per drag hour, 1969.^{1/}

Month	Total hours dragged	Total pounds	Pounds per hour	Area
July	39	87,500	2,243	241- <u>11</u> ,12
August	87	110,550	1,271	241- <u>11</u> ,12,15,16
September	46	167,930	3,651	241- <u>11</u> ,12, <u>16</u>
October	55	172,030	3,128	241- <u>15</u> , <u>16</u>
November	61	113,660	1,863	241- <u>15</u>
December	61	155,100	2,543	241-15
Totals	349	806,770	2,312 average pounds per drag hour	

^{1/} From log book of vessel fishing Kachemak Bay area of Cook Inlet.

OTHER FISHERIES

Herring

Areas of greatest concentration of herring in Cook Inlet-Resurrection Bay include the Kamishak Bay, Eastern, Southern, and Outer Districts. Spawning usually occurs in the latter part of April through May, but will vary from area to area.

A total of 2.7 million pounds (1,350 tons) of herring were taken in 1969 by six different operators. Of the total catch approximately 1.0 million pounds were taken in the Resurrection Bay area and the remainder from Kachemak Bay in the Southern District.

The bulk of all herring taken in 1969 were utilized for the roe. There was no roe on kelp harvest in 1969.

Of the 1.0 million pounds taken in Resurrection Bay all herring were salted aboard a small Japanese vessel then delivered to Korea where the eggs were to be stripped and sent to the Japanese market as sac roe. The carcasses were to be used by the Korean troops fighting in Vietnam. One operator extracted eggs from 97,689 pounds of herring. The eggs were salted as roe and the carcasses frozen to be used as halibut and king crab bait. However, fishermen that tried the carcasses as bait reported it as unsatisfactory.

In addition, 14,244 pounds of the total catch was used as bait.

Department of Fish and Game personnel took a small sample of the 1969 catch in order to initiate an age, weight, length analysis of the stocks. This program will continue in 1970. A comprehensive history of the Cook Inlet herring fishery is to be compiled in a technical report form and available in late 1970.

Salmon roe production

Four shore plants and one floater filed intents to process salmon roe in 1969.

Total production for all operators was 312,641 pounds of roe, all species of salmon included. Of the total production one operator processed 55.4 per cent, or 173,301 pounds of roe. Unfortunately, the wholesale value of the finished product was not available for this operator.

Wholesale value of the finished product was available for 139,340 pounds and was estimated at \$42,442. Total estimated value was probably in the neighborhood of \$85,000.

Subsistence fishery

A total of 447 subsistence permits were issued in 1969. Of these the Anchorage office issued 201; the Palmer office issued 89; Soldotna and Seward issued 72, and Homer issued 85.

Of the 447 permits issued, 395 were returned indicating that of these 181 did not fish. Of the 214 that did fish a total of 3,691 salmon were taken. A breakdown by district and species is given in Table 28.

TABLE 28. Subsistence salmon catch by district and species, Cook Inlet-Resurrection Bay, 1969.

District	Reds	Coho	Pinks	Chums	Total
<u>Northern</u>					
Knik Arm	524	697	22	76	1,319
West Side	28	55		9	92
Fire Island		72		3	75
East Side	30	47			77
<u>North Central</u>					
Kasilof, Coho, Salamantoff	4	247	2		253
<u>South Central</u>					
Ninilchik, Clam Gulch	2	141	4		147
<u>Southern</u>					
	7	40	10		57
Millers Landing		395	22		417
Mud Bay	2	317	6		325
<u>Eastern</u>					
Resurrection Bay	921		2	6	929
Total	1,518	2,011	68	94	3,691
Per cent	41.1	54.6	1.8	2.5	100.0

FIELD PROJECTS

Field activities for 1969 included five escapement enumeration and sampling programs; two red salmon commercial catch sampling programs; one stream clearance program; one herring catch sampling program; and one pink salmon egg-digging-pre-emergent fry sampling program used in forecasting pink salmon returns to the Southern and Outer Districts. In addition, spawning ground surveys are conducted in the fall on major areas by foot and boat.

A sporadic attempt has been made to sample the commercial king crab fishery for length frequencies and per cents of sublegal males, number of females and ovigerous females being caught incidentally to the commercial catch.